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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,776	01/18/2005	Yuichi Takamine	36856.1316	7098

54066 7590 08/18/2006

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EXAMINER

SUMMONS, BARBARA

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 08/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/521,776

Applicant(s)

TAKAMINE, YUICHI

Examiner

Barbara Summons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/28/05 (sub-spec) & 6/10/05 (pre-amdt).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-48, 51, 54 and 60 is/are allowed.
- 6) ☒ Claim(s) 27-32, 35-43, 49, 50 and 55-59 is/are rejected.
- 7) ☒ Claim(s) 33, 34, 52 and 53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/28/05 & 6/13/05
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the embodiment of claims 55-57 having a second surface acoustic wave (SAW) filter with two signal lines 180 degrees out of phase connected to the first and second interdigital transducers (IDTs) of the first mentioned SAW filter (claims 27, 39 and 44) with the first and second IDTs connected to "an unbalanced signal terminal" (see e.g. claim 27, the next to last paragraph) and having one of the first and second IDTs with a ground electrode finger adjacent to the center IDT and the other with a signal electrode finger adjacent the center IDT (see claim 27, lines 12-18) must be shown or the feature(s) canceled from the claim(s). That is, Applicant's Fig. 36 shows first and second IDTs 503 and 505 both having a ground electrode finger adjacent to the center IDT 504 (see also the § 112 rejection below). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

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of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 55-57 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of claims 55-57 recites a second SAW filter with first and second signal lines with a 180 degree phase difference coupling the first and second IDTs of the second SAW filter to the first and second IDTs of the first mentioned SAW filter, but the independent claims have recited that the first and second IDTs of the first filter are connected to an unbalanced terminal. This raises the question, if the first and second IDTs of the first filter are connected to an unbalanced terminal, how can they accept balanced/180 degree out of phase signals on the two signal lines recited in claims 55-57? It appears they cannot, especially if they are phase reversed as also recited in the independent claims since one side IDT has a ground electrode finger adjacent to the center IDT and the other has a signal electrode finger adjacent to the center IDT as also

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recited in the independent claims. The specification and claims do not shine any light on the subject, especially since Fig. 36 directly contradicts the independent claim recitation of the first and second IDTs having a respective ground and signal electrode adjacent the center IDT, as Fig. 36 shows they must both have a ground electrode adjacent the center IDT. Clarification is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 27-32, 35-38, 49 and 58 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13-19 of U.S. Patent No. 6,717,489. Although the conflicting claims are not identical, they are not patentably distinct from each other because each of claims 13-18 of the '489 patent recite a SAW longitudinally coupled filter with three IDTs with a central IDT split so that

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its halves are connected to balanced terminals, the outer IDTs being reversed in phase, which obviously would have meant one of them having a grounded electrode finger adjacent the center IDT and the other having a signal electrode finger adjacent the center IDT, and each claim recites some form of asymmetry between the two sides opposite an imaginary line through the center of the central IDT. For example, claim 14 of the '489 patent reads on claims 27-29, 31 and 38 of the instant application since either the right or left of center IDTs can be considered the first or second IDT or vice versa, and if the pitches are different in the narrow pitch finger portions (last paragraph of the claim) one will necessarily be greater than the other and that can be in the narrow pitch portion in the two side IDTs or the narrow pitch portions in the two bisected halves of the central IDT. Additionally, it would have been notoriously well known for the outer fingers of the central IDT to be either both floated or grounded or to be both signal electrodes, which would be obvious art recognized alternatives requiring only a reversal of parts. Similarly, claim 13 of the '489 patent reads on claims 35 and 36 of the instant application, claim 16 of the '489 patent reads on claim 32 of the instant application, claim 19 of the '489 patent reads on claim 58 of the instant application, and regarding claim 49 of the instant application, it would have been obvious to cascade connect SAW longitudinally coupled filters to achieve desired filter characteristics.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 27-29, 31, 32, 35, 36, 38, 49 and 58 are rejected under 35 U.S.C. § 102(b) as being anticipated by Takamine U.S. 2002/0021195.

Note this is the published application that resulted in the Patent applied above.

Fig. 9 of Takamine '195 discloses a SAW filter 300 with first and second outer IDTs 300a and 300c on each side of a bisected center IDT 300b with its halves 300b1 and 300b2 connected to balanced signal terminals, the outer IDTs connected to an unbalanced signal terminal 301 via a second SAW filter 311, the first IDT 300a has a ground electrode finger adjacent to the center IDT and the second IDT 300c has a signal electrode finger adjacent to the center IDT, and one of a pitch or a duty of the narrow finger electrode portions is different on the left and right side of a vertical imaginary line through the center of the device (see sections [0047]-[0048]) or an intercentral distance between electrode fingers of the two adjacent IDTs first/center vs. second/center are different (section [0050]) so that the device is asymmetrical, and wherein the filter is used in a communication apparatus (Fig. 21). Note that in Fig. 9 the outer electrodes of the split IDT 300b must inherently be either floated or ground since the opposing bus bars are the signal bus bars. Also, either the left or right IDT 300a or 300c can be considered to be the first IDT and the other the second IDT and vice versa, and since the pitches, duties or intercentral distances between IDTs being different means inherently one must be greater than the other, then the features of e.g. the last two lines of claims 29, 31, 32, 35, 36 etc. are met.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 30 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Takamine U.S. 2002/0021195 in view of Baier et al. U.S. 6,353,372.

Takamine '195 discloses the invention as discussed above, except for explicitly disclosing that the outer electrode fingers of the bisected IDT are signal electrodes.

Baier et al. shows the art recognized alternative bisected IDT that has the signal electrodes as its outer electrodes (see Fig. 6) rather than the ground/floated electrodes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW filter of Takamine (Fig. 9) by having replaced the central bisected IDT 300b having ground/floated outer electrodes with an IDT having outer signal electrodes, because such an obvious modification would have been merely the substitution of art recognized alternative split IDTs requiring only the routine reversal of parts as would have been known and suggested to one of ordinary skill in the art by the exemplary teaching thereof by Baier et al. (Fig. 6).

10. Claims 39-43, 50 and 59 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakazawa et al. JP 11-97966 (cited by Applicant) in view of Shibata et al. EP 1 330 027 (cited by Applicant).

This rejection parallels that of the International Searching Authority.

Fig. 1 of Nakazawa et al. discloses a SAW filter having first and second IDTs 12 and 13 connected to an unbalanced signal terminal 17 with one of the first and second IDTs 12/13 on each side of a bisected central IDT 11 that is connected to balanced signal terminals 15 and 16, the IDT 12 having a signal electrode finger adjacent to the central IDT and the IDT 13 having a ground electrode finger adjacent to the central IDT. Regarding claim 50, Fig. 2 shows a second SAW filter 1b connected to the first and second IDTs of the first mentioned SAW filter 1a.

However, Nakazawa et al. does not show two SAW resonators connected between the first and second IDTs 12/13 of the first SAW filter and the unbalanced terminal 17, and wherein the two SAW resonators have the recited different design parameters, the different design parameters being the pitch of the electrode fingers (claim 40), the duty of the electrode fingers (claim 43), the ratio between IDT finger pitch and reflector pitch (claim 41) and the intercentral electrode finger distance between the IDTs and the reflectors (claim 42).

Shibata et al. specifically discloses including two such resonators 3 and 4 (see the abstract and Fig. 1) between a SAW filter and an unbalanced terminal 7, the two resonators with different pitches of electrodes (see e.g. section [0054]), duty of electrodes (e.g. section [0047]), pitch ratio of IDT/reflector (e.g. section [0077]), or intercentral distance between IDTs and reflectors (e.g. section [0091]) to improve the balance characteristics of such a balance/unbalance SAW filter (see sections [0012]-[0016]). Additionally, although the figures in Shibata et al. show two parallel connected

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SAW filter sections 1 and 2, Shibata et al. explicitly suggests using the two resonators between the IDTs and unbalanced signal terminal of only one SAW balance/unbalance filter (see section [0072]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW filter of Nakazawa et al. (Fig. 1) by having provided two SAW resonators with different design parameters between the first and second IDTs 12/13 and the unbalanced terminal 17 because of the explicit suggestion to do so by Shibata et al. (see the abstract) even with balance/unbalance filters with only one SAW filter (see section [0072]), and because such an obvious modification would have provided the benefits of improved balance and increased common mode rejection at high frequencies as also explicitly suggested by Shibata et al. (see sections [0014]-[0016] and [0072]).

Allowable Subject Matter

11. Claims 44-48, 51, 54 and 60 are allowable over the prior art of record.
12. Claims 33, 34, 52 and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
13. The Examiner cannot make a patentability determination on claims 55-57 at this time due to their apparent contradictions of the independent claims, and the unclear nature as to whether the device would even function having the features and the parts connected as recited.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takamine EP 1 280 274 is an English language equivalent of JP 2003-46369 (cited by Applicant), and it specifically discloses that the asymmetric arrangement of the SAW filter 201 (see the abstract) can be used with any balance/unbalance SAW filter (see section [0049]).

Nako et al. EP 1 267 490 discloses all of the various types of balance/unbalance SAW filters (see Figs. 9-12 and section [0033]).

Saw et al. U.S. 5,835,990 discloses various SAW filters with a bisected central IDT (see Figs. 15 and 17-20) some of which have outer ground electrode fingers and some of which have outer signal electrode fingers.

Takamine U.S. 6,583,691 specifically discloses a SAW filter with the bisected central IDT having grounded electrode fingers (see Fig. 18).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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bs

August 15, 2006


BARBARA SUMMONS
PRIMARY EXAMINER